

## REMARKS

Claims 5-27 are all the claims presently pending in the application. Claims 1-4, drawn to a non-elected invention, previously were canceled. Claims 5, 14, and 26-27 have been amended to more particularly point out the invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to or cancellation of any claim during prosecution of this application should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended or canceled claim.

Claims 5-13 and 24-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 6,769,798 to Mishimagi in view of U.S. Pat. No. 6,674,096 to Sommers. Claims 14-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mishimagi in view of U.S. Pat. No. 5,865,529 to Yan.

The rejections respectfully are traversed in the following discussion.

### I. THE CLAIMED INVENTION

#### A. Independent claims 5 and 26:

Claim 5 recites a rearview mirror apparatus, for a vehicle, that includes a housing with a mirror disposed on a back side of the housing. An LED includes a light emitting element that plane-radiates light in a direction nearly perpendicular to the optical axis of the light emitting element.

A light guiding member is attached to the housing such that the light guiding member is exposed in an opening formed at part of the outer surface of the housing. The LED is disposed in the light guiding member. The light guiding member comprises a hole to fit the LED individually. The LED is received in the hole so that the light guiding member allows light plane-radiated from the LED to be transmitted through the light guiding member and to be reflected on a light guiding member inner surface to be radiated in a desired direction.

Claim 26 recites a rearview mirror apparatus with a housing that includes a mirror disposed on a back side of the housing. At least one light-emitting diode (LED) includes a light emitting element and plane-radiates light in a direction nearly perpendicular to the optical axis of the light emitting element. A light guiding member attached to the housing is exposed in an opening formed at part of the outer surface of the housing. The light guiding member

comprises a hole to fit the LED individually, the LED being received in the hole, so that light guiding member allows light plane-radiated from the LED to be transmitted through the light guiding member, and to be reflected on an inner surface of the light guiding member to be radiated in a desired direction

The invention has the features that “the light guiding member comprises a hole to fit the LED individually, the LED being received in the hole, so that the light guiding member allows light plane-radiated from the LED to be transmitted through the light guiding member and to be reflected on a light guiding member inner surface to be radiated in a desired direction,” as recited by pending claims 5 and 26.

Thus, light emitted from the LED can efficiently enter the light guide member, so as to increase the amount of light externally radiated from the light guiding member, since, for example, the hole of the light guide member is adapted to fit the LED individually.

**B. Independent claim 14:**

Claim 14 recites a rearview mirror apparatus, for a vehicle, that includes a housing with a mirror disposed on a back side of the housing. An LED includes a light-emitting element and radiates light in an optical axis direction of the light emitting element and in a direction nearly perpendicular to the optical axis direction of the light emitting element.

A reflector that is disposed along the shape of the housing at part of the outer surface of the housing comprises at least one concave reflection surface which allows light radiated from the LED disposed at a center of the concave reflection surface to be reflected in the front or side direction of the vehicle.

Thus, the effects of the invention can be obtained, including, for example, that “[b]y combining the plane radiation type LED’s 11A, 11B and the reflector 12 with mirror surfaces 12A, 12B having a large curvature radius, the range of light radiation can be significantly wider even when using only one LED. Therefore, the number of LED’s used can be reduced. Furthermore, the circuit board 14A, 14B can be downsized and the reflector 12 can be thinned. Hence, the occupied space of LED lamp 10 can be reduced not to affect the deposition of mirror 4 and mirror support member.” See the present application, page 38, line 27 to page 39, line 6.

**II. THE PRIOR ART REJECTIONS**

**A. Mishimagi and Sommers:**

Claims 5-13 and 24-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable

over Mishimagi in view of Sommers. Applicants respectfully traverse.

**1. Mishimagi:**

Mishimagi discloses a side mirror cover lamp “for allowing flickering or illumination of lamps to be visible from relatively a wide range.” See, *inter alia*, the Mishimagi Abstract. In order to increase the lamp’s ability to be visible from a wide range, Mishimagi teaches that LED 27b emits light “toward the side of the vehicle 10.” (Mishimagi, col. 3, lines 1-2.)

The lamp disclosed by Mishimagi also includes LEDs 27a, which are mounted to emit light toward the front of the vehicle. LEDs 27a and 27b emit light directionally, in an axial direction.

Mishimagi does not disclose or suggest the features that “the light guiding member comprises a hole to fit the LED individually, the LED being received in the hole, so that the light guiding member allows light plane-radiated from the LED to be transmitted through the light guiding member and to be reflected on a light guiding member inner surface to be radiated in a desired direction,” as recited by claims 5 and 26. Thus, since the cover lamp 23 of Mishimagi does not fit the LED’s 27a individually (see FIG. 1 of Mishimagi, for example), light emitted from the LED’s 27a will be reflected considerably by the incident surface of the cover lamp 23. As a result, the amount of light externally radiated from the cover lamp 23 will be a reduced portion of the light emitted overall by the cover lamp 23.

Further, Mishimagi does not disclose or suggest a plane radiating LED. Instead, Mishimagi teaches that LED 27b, illustrated in FIGS. 1 and 6, is mounted on the ‘additional support portion’ described by the Office. See paragraph 7 on page 7 of the outstanding action. Thus, LED 27b emits axial light directed toward the side of the vehicle. The light emitted by LED 27b toward the side of the vehicle also radiates further, into the second corner section 26a of the lamp cover 26. This light is visible from the side of the vehicle. (See Mishimagi, col. 3, lines 11-44.)

This light from LED 27b also is visible from the rear of the vehicle. Thus, Mishimagi teaches that the side-directed light passes through the inside of the lamp cover 26 toward the outer end widthwise of the vehicle, and emits from the lamp cover at the outer end portion of the second corner section 26a toward the rear of the vehicle. The arrangement provides a wide visibility range, as shown in FIG. 5, which ensures sufficient safety. See Mishimagi, col. 8, line 64, to col. 9, line 8.

The Office admits that Mishimagi does not disclose a plane-radiating LED, and proposes to replace LED 27b with the LED disclosed in Sommers. Thus, the Office alleges,

Mishimagi and Sommers combine to render obvious the recited invention. Applicants respectfully disagree: The LED disclosed by Sommers is not a plane-radiating LED, and, in any event, is not a satisfactory replacement for axially-radiating LED 27b of Mishimagi. Further, even if Sommers disclosed a plane-radiating LED, which it does not, the plane-radiating LED would not be a satisfactory replacement for LED 27b of Mishimagi.

## 2. Sommers:

The LED disclosed by Sommers radiates non-directional light that appears to emanate from an approximate point source. See Sommers, *inter alia*, in the last sentence of the Abstract. Thus, rather than the ‘highly directional’ output called for in the Mishimagi device, the LED of Sommers projects distributed light. As such, the patented Sommers LED is suitable as a replacement for an incandescent light bulb. See Sommers, col. 2, lines 54-57.

The Office proposes to mount the LED disclosed by Sommers so that it aligns axially parallel with, instead of orthogonal to, the forward-illuminating LEDs 27a. See FIG. 1 of Mishimagi. Applicants note, in this regard, that the LED disclosed by Sommers, mounted in the patented Mishimagi structure parallel with LEDs 27a, will emit only a small portion of its ‘point source’ light toward the side of the vehicle.

The Office urges that mounting the replacement LED from Sommers in parallel with LEDs 27a eliminates the need in Mishimagi for the ‘additional support portion.’ Elimination of the ‘additional support portion’ is alleged by the Office to be a rationale for the proposed modification.

Applicants note, however, that mounting the LED disclosed by Sommers in parallel with LEDs 27a of Mishimagi requires elimination of the ‘additional support portion.’ Otherwise, the ‘additional support portion’ will obstruct light from the LED disclosed by Sommers that should be radiating sideways into the lamp cover 26 of Mishimagi.

Thus, rather than being a rationale for, or providing an expected benefit from, the proposed modification, elimination of the ‘additional support portion’ is necessary to implement the modification proposed by the Office. In other words, the alleged rationale of eliminating the ‘additional support portion’ is a benefit only to the extent that it accommodates the modification needed to combine the prior art references.

Absent the proposed modification of replacing LED 27b of Mishimagi with the LED of Sommers, no benefit would accrue from, and no reason would exist for, eliminating the ‘additional support portion.’ Mishimagi, modified to eliminate the ‘additional support portion,’ would not operate as designed, because without the ‘additional support portion,’ LED

27a would not emit light toward the side of the vehicle. Thus, Applicants respectfully submit that alleged elimination of the ‘additional support portion’ does not provide an advantage or a beneficial result.

Moreover, the Office has not provided an explanation of the advantage<sup>1</sup> of eliminating the ‘additional support portion.’ Elimination of the ‘additional support portion’ is not a sufficient rationale for the proposed combination of Mishimagi and Sommers.

The Office also alleges that the proposed combination will “increase the efficiency of the coupling between the LED and the light guiding member.” Applicants respectfully disagree: The LED disclosed by Sommers will not couple more efficiently than LED 27b with the lamp cover 26 of Mishimagi. Instead, the coupling between the LED disclosed by Sommers and the lamp cover 26 will be significantly less efficient.

Applicants note at the outset that the Office has not provided evidence or a line of reasoning to support the bare allegation that the combination will “increase the efficiency of the coupling between the LED and the light guiding member.” Instead, the Office alludes to the disclosure of Sommers as supporting the allegation. Sommers does not, however, support the Office’s allegation of more efficient coupling between the LED and the light-guiding member.

Indeed, the ‘coupling’ disclosed in Sommers is not the coupling between the LED and the light-guiding member. Instead, Sommers teaches that a disadvantage of LEDs is their poor light coupling through the LED surface. The poor light coupling through the LED surface reduces external quantum efficiency, and produces a highly directional external intensity distribution.<sup>2</sup> Thus, there is no support to be found in Sommers for the Office’s allegation of more efficient coupling between the LED and the light-guiding member.

Further, Applicants urge that the coupling between the replacement LED and the lamp cover of Mishimagi would not be more efficient. Instead, as discussed below, the coupling between the replacement LED and the lamp cover of Mishimagi would be less efficient.

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<sup>1</sup> The Office alludes to a ‘simplified’ rearview mirror structure. See page 7, paragraph 7, of the outstanding action. Applicants note, however, that the proposed modification of the patented Mishimagi device specifies two different LED lights. Applicants urge that the different LED lights necessarily will compound, and will not simplify, the manufacturing and circuitry needed to produce the modified Mishimagi device. That is, the proposed combination does more than merely ‘simplify the rearview mirror structure’ of Mishimagi. Applicants respectfully urge that the Office has not developed sufficient support for the alleged benefit of ‘simplifying the structure.’ No such benefit is recognized, expressly or impliedly, in the prior art, and such benefit is not drawn from a convincing line of reasoning based on established scientific principles or legal precedent. See MPEP § 2144. The Office has not established a rationale, advantage, or expected beneficial result from the proposed combination.

Moreover, and in any event, significantly less light will radiate sideways into the lamp cover 26 of Mishimagi from a point-source LED, such as that disclosed by Sommers, than will radiate from the LED 27a taught by Mishimagi. Further, significantly less light also will radiate into the lamp cover 26 of Mishimagi from a plane-radiating LED, than will radiate from the LED 27a taught by Mishimagi.

The amount of light will be significantly less, and coupling between the replacement LED of Sommers and the lamp cover 26 of Mishimagi would be less efficient (as compared to the coupling efficiency of the original LED 27b), because the replacement LED from Sommers emits less light (than LED 27b) toward the side of the vehicle and into the 2<sup>nd</sup> corner section 26a of the lamp cover 26. See FIG. 1 of Mishimagi at FIG. 5.

More specifically, whereas the original LED 27b would radiate essentially all of its emitted (highly directional) light toward the side of the vehicle and into the 2<sup>nd</sup> corner section 26a, the replacement LED taught by Sommers will radiate toward the light guide only a portion of its light, e.g., only that light radiating from the side of the LED facing the 2<sup>nd</sup> corner section 26a.

The rest of the light radiating from the replacement LED will shine in every other direction, similar to any point-source, including downward (toward the street), upward (toward the sky), and inward (toward the vehicle). Thus, there is no explicit or implicit support in the prior art, and no convincing line of reasoning is advanced by the Office, for the allegation that the coupling efficiency of the LED with the lamp cover (light guiding member) will increase.

On the contrary, it stands to reason that the coupling efficiency between the LED and the lamp cover will decrease. In any event, less light will radiate toward the side of the vehicle. As a result, the functional capabilities and operation of the modified structure proposed by the Office would differ from those of the device patented to Mishimagi. Further, one of ordinary skill in the art would not be motivated to modify the patented invention of Mishimagi with a less-effective lamp, such as that disclosed by Sommers.

Claim 5 is patentable over Mishimagi in view of Sommers. Claims 6-13 and 24-25 depend directly or indirectly from claim 5, and are patentable over Mishimagi in view of Sommers for at least the same reasons.

Claim 26 and its dependent claim 27 are submitted to be patentable over the cited references for reasons analogous to those discussed above with respect to claim 5.

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<sup>2</sup> Applicants note that a "highly directional external intensity distribution" would be an advantage, not a disadvantage, in the LED 27b of Mishimagi.

**B. The Mishimagi and Yan References - Claims 14-23:**

The Office action alleges that Mishimagi discloses all limitations of independent claim 14, except the LED plane-radiating light in a direction nearly vertical to the optical axis of the light emitting element.

Applicants agree that this limitation is not taught by Mishimagi. Applicants respectfully urge, however, that Mishimagi does not disclose all other limitations of claim 14.

Mishimagi, as discussed above in more detail, discloses LEDs 27 that emit light along their optical axes toward a lamp cover. Supplying the LED lamp of Yan does not cure the deficiencies of Mishimagi.

**1. Mishimagi:**

The reference to Mishimagi fails to disclose the features that “(the reflector) comprises at least one concave reflection surface which allows light plane-radiated from the LED disposed at a center of the concave reflection surface to be reflected in the front or side direction of the vehicle”, as recited by claim 14.

More specifically, none of the LED’s 27a and 27b of Mishimagi is disposed at the center of the second corner section 26a of Mishimagi which may be formed concave. Therefore, the effects of the invention as mentioned above can not be obtained, even by combining Mishimagi and Yan.

**2. Yan:**

Yan discloses an LED lamp that radiates light in a “uniformly distributed spherical pattern.” See Yan, Abstract, first sentence. Thus, Yan does not disclose a plane radiating LED. Further, replacement of LED 27b of Mishimagi with the LED lamp disclosed by Yan suffers from the same drawbacks as presented by the LED lamp disclosed by Sommers, as discussed above. Accordingly, the LED disclosed by Yan also is not a satisfactory replacement for LED 27b of Mishimagi.

Claim 14 is patentable over Mishimagi in view of Yan. Claims 15-23 depend directly or indirectly from claim 14, and are patentable over Mishimagi in view of Yan for at least the same reasons.

**III. FORMAL MATTERS AND CONCLUSION**

In view of the foregoing, Applicants submit that claims 5-27, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in

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condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

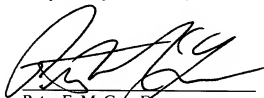
Should the application be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

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